

Name

Key

Date

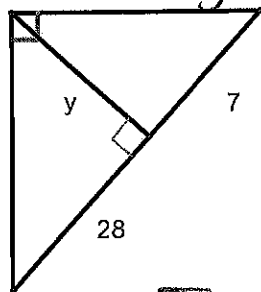
202 Chapter 7 Test Review

Solve for x, y, and/or z. Show work. Figures are not drawn to scale.

For #s 1-16, use **exact answers** only. No decimals.

Use geometric mean for #s 1 and 2.

1. $y = 14$



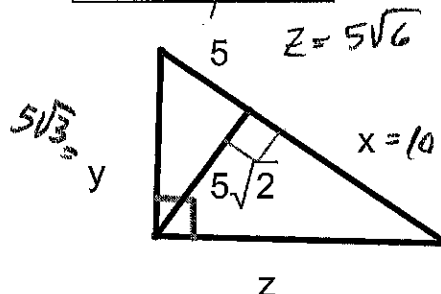
$$\frac{7}{y} = \frac{y}{28}$$

$$y^2 = 7 \cdot 28$$

$$y^2 = 196$$

$$y = 14$$

2. $x = 10$ $y = 5\sqrt{3}$



$$\frac{x}{5\sqrt{2}} = \frac{5\sqrt{2}}{5}$$

$$50 = 5x$$

$$10 = x$$

$$\frac{5}{y} = \frac{y}{15}$$

$$y^2 = 5 \cdot 15$$

$$y^2 = 75$$

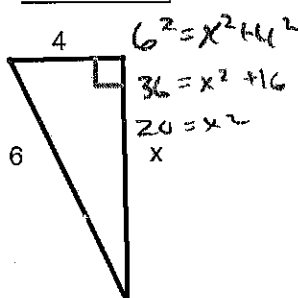
$$y = 5\sqrt{3}$$

$$\frac{10}{z} = \frac{z}{15}$$

$$z^2 = 150$$

$$z = 5\sqrt{6}$$

3. $2\sqrt{5} = x$



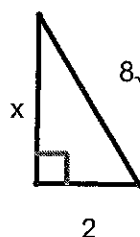
$$6^2 = x^2 + 4^2$$

$$36 = x^2 + 16$$

$$20 = x^2$$

$$x = 2\sqrt{5}$$

4. $2\sqrt{31}$



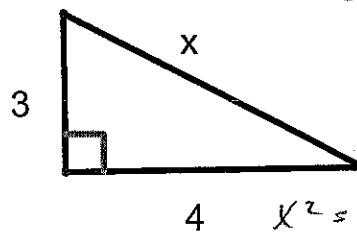
$$(8\sqrt{2})^2 = x^2 + 2^2$$

$$128 = x^2 + 4$$

$$124 = x^2$$

$$x = 2\sqrt{31}$$

5. $x = 5$



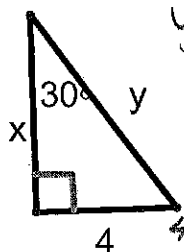
$$x^2 = 3^2 + 4^2$$

$$x^2 = 9 + 16$$

$$x^2 = 25$$

$$x = 5$$

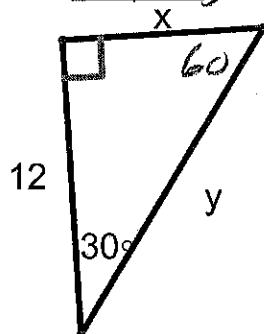
6. $x = 4\sqrt{3}$



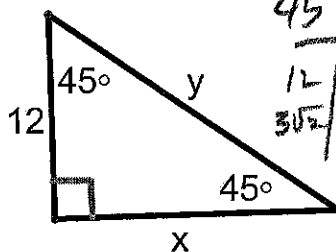
$$y = 8$$

30	60	90
x	$x\sqrt{3}$	2x
4	$4\sqrt{3}$	8
$4\sqrt{3}$	12	$8\sqrt{3}$

7. $x = 6\sqrt{3}$ $y = 8\sqrt{3}$

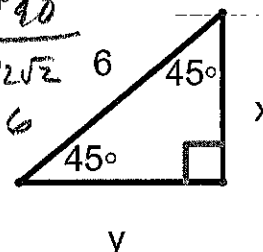


8. $x = 12$ $y = 12\sqrt{2}$



9. $x = y = 3\sqrt{2}$

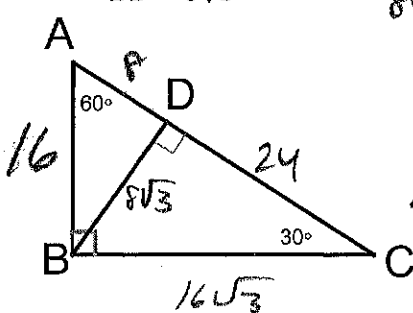
45	45	90
12	12	$12\sqrt{2}$
$3\sqrt{2}$	$3\sqrt{2}$	6



10. $AB = 16$

$CD = 24$

$BD = 8\sqrt{3}$

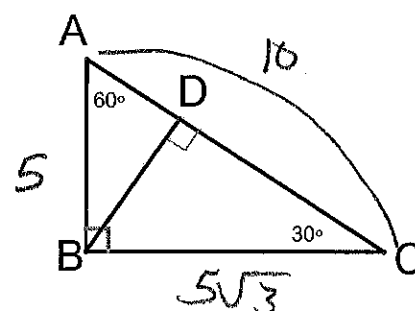


$8\sqrt{3}$	24	
8	$8\sqrt{3}$	16
5	$5\sqrt{3}$	10
$2.5\sqrt{3}$		$5\sqrt{3}$

11. $AB = 5$

$BD = 2.5\sqrt{3}$

$AC = 10$



Classify the triangle acute, right, or obtuse.

12. Obtuse 3, 7, 9

$$81 > 9 + 49$$

13. Obtuse

$$\sqrt{29}^2 \stackrel{?}{>} \sqrt{10}^2 + \sqrt{13}^2$$

$$29 > 10 + 13$$

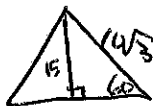
A(0, 4) B(1, 1) C(3, 6)

$$AB = \sqrt{1^2 + 3^2} = \sqrt{10}$$

$$BC = \sqrt{2^2 + 5^2} = \sqrt{29}$$

$$AC = \sqrt{3^2 + 2^2} = \sqrt{13}$$

14. What is the perimeter of an equilateral triangle with a height of 15? (Draw a picture.)



30	60	90
$5\sqrt{3}$	15	$10\sqrt{3}$

$$P = 3 \cdot 10\sqrt{3} = 30\sqrt{3} \text{ units}$$

15. What is the height of an equilateral triangle with one side equal to 18?



30	60	90
9	$9\sqrt{3}$	18

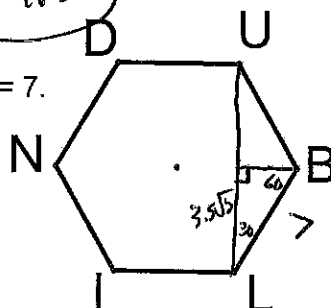
$$h = 9\sqrt{3}$$

16. Given the regular hexagon, find UL. $DU = 7$.

$$m\angle B = 120^\circ$$

$$UL = 7\sqrt{3}$$

$$3.5\sqrt{3} \times 2$$



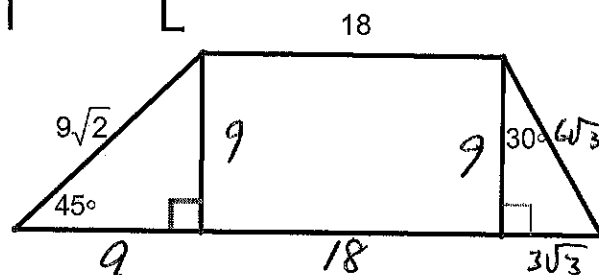
30	60	90
3.5	$3.5\sqrt{3}$	7

17. Find the perimeter of the trapezoid below.

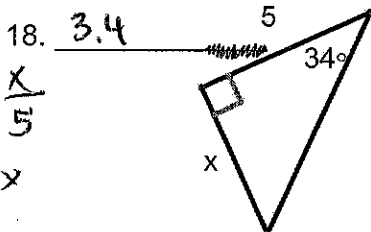
Round to the nearest tenth.

$$P = 18 + 9\sqrt{2} + 9 + 18 + 3\sqrt{3} + 6\sqrt{3}$$

$$P \approx 73.3 \text{ units}$$



30	60	90
$3\sqrt{3}$	9	$6\sqrt{3}$

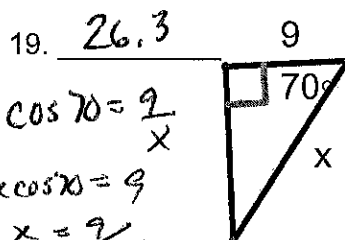


18. 3.4

$$\tan 34 = \frac{x}{5}$$

$$5 \cdot \tan 34 = x$$

$$3.4 \approx x$$



19. 26.3

$$\cos 70 = \frac{9}{x}$$

$$x \cos 70 = 9$$

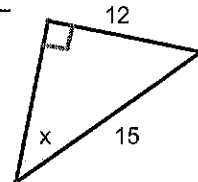
$$x = \frac{9}{\cos 70}$$

20. 53.1°

$$\sin x = \frac{12}{15}$$

$$\sin^{-1}(\frac{12}{15}) = x$$

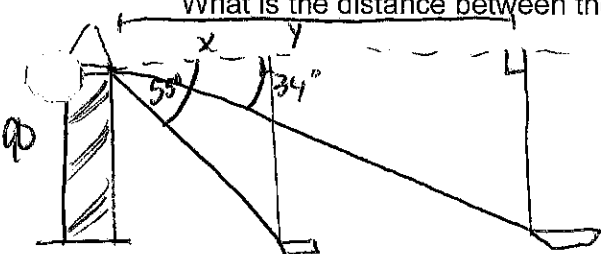
$$x \approx 53.1$$

21. 36.9° A 15ft ladder is placed against a building. It needs to reach a height of 9ft. What angle should it be placed?

$$\sin x = \frac{9}{15}$$

$$\sin^{-1}(\frac{9}{15}) = x$$

$$x \approx 36.9$$

22. 70.4 ft A lighthouse watchman observes two sailboats east of the lighthouse. The angles of depression to the two boats are 34° and 55°. The height of the lighthouse is 90ft. What is the distance between the boats?

$$\tan 34 = \frac{90}{y}$$

$$y \tan 34 = 90$$

$$y = \frac{90}{\tan 34}$$

$$y = 133.4$$

$$\tan 55 = \frac{90}{x}$$

$$x \tan 55 = 90$$

$$x = \frac{90}{\tan 55}$$

$$x = 63.0$$

$$\begin{array}{r} 133.4 \\ -63.0 \\ \hline 70.4 \end{array}$$